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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XIV SEPTEMBER, 1942 No. 9

FIG. 74. H. C. Shetrone, Director, The Ohio Museum, Columbus, Ohio.

CACTUS AND SUCCULENT JOURNAL

Published and Owned by the Cactus and Succulent Society of America, Inc., Box 101, Pasadena, California. A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. Subscription $3.00 per year. Foreign $3.00 per year by international money order. Membership in the Cactus Society free with subscription. Mail application to SCOTT HASELTON, *Editor,* Box 101, Pasadena, Calif. *Editorial Staff:* THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879.

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ANNUAL MEETING

Members of the Society and their friends are cordially invited to attend the Annual Membership Meeting of the Cactus and Succulent Society of America, to be held Sunday, October 4th, 1942, at Gates Famous Cactus Gardens, Corona, Calif. Phone: Corona 626.

How to get there:

Via Pomona, take Fifth Ave. in Pomona, continue east to about five miles east of Ontario where there are signs reading, "Riverside County Line" and "Norco." Turn south, pass through Norco to Fourth St., go east to end of street, then south one half mile to the Gardens.

Via Santa Ana Canyon, go to the signal in Corona, turn north on Main St., go about three miles to Fourth St., then as above.

Come early and see the Lower California Botanical Garden as well as the thousands of cacti and other succulents that cover thirteen acres. There will be a formal dedication of the Gates Baja California Botanical Garden which will be one of the features of the meeting.

Bring your lunch, table and stools. Our host will furnish coffee and dessert.

In the interest of tire economy, those of you who plan to drive are urged to fill your car with fellow members or friends.

Remember! Sunday, October 4th. Lunch at 1 p. m.

ERVIN STRONG, *President.*

STAGE AND TRAIN SERVICE TO ANNUAL MEETING, OCTOBER 4TH

From Los Angeles: Inland Stage Line via Montebello, Fullerton, Anaheim, Olive. Leave depot Sixth and Los Angeles Streets, 8:08 A. M. Arrive Corona 10:10 A. M. Leave Corona 7:10 P. M. Arrive Los Angeles 9:10 P. M.

Pacific Electric (Motor Transit), 202 E. Fifth St. Stages via Montebello, Whittier, La Habra, Fullerton, Orange, Olive. Leave depot 7:20 A. M. Arrive Corona 9:49 A. M. Also same route leave at 9:20 A. M., lay over one hour at Orange and arrive Corona 12:49 P. M. Leave Corona 6:38 P. M. Arrive Los Angeles 9:06 P. M. Schedules via Whittier require transfers at Fullerton and Orange.

Pacific Electric (Motor Transit) Stages via Norwalk, Downey, Fullerton with transfer at Orange only. Leave Los Angeles 7:40 A. M. Arrive Corona 9:49 A. M. Also same route. Leave Los Angeles 10:35 A. M. Arrive Corona 12:49 P. M. Leave Corona 6:38 P. M. Arrive Los Angeles 8:15 P. M.

Santa Fe R.R. Leave Los Angeles Union Depot 8:00 A. M. Arrive Corona 9:08 A. M. Leave Corona 7:30 P. M. Arrive Los Angeles 9:00 P. M. The return Santa Fe train is usually one to four hours late as it starts from Chicago.

From Long Beach: Pacific Electric (Motor Transit) Stages via Seal Beach, Westminster, Santa Ana. Leave depot 226 East First St., 8:01 A. M. Arrive Corona 9:49 A. M. Also leave 11:01 A. M. Arrive Corona 12:49 P. M. Leave Corona 6:38 P. M. Arrive Long Beach 8:30 P. M.

The host will meet all the above schedules with transportation for the five mile trip to the Gardens. Parties arriving at other times should phone Corona 626.

CACTACEAE

By Marshall and Bock

We have just completed the first copy of the CACTACEAE with all of the 25 Plates hand colored. The artist, Agnes Marshall, worked directly with the live material from the senior author's garden and the colors are therefore very accurate. Price $50.00.

BOX 101, PASADENA, CALIFORNIA

PHILADELPHIA CACTOPHILES

Cactus Club Forming.

In spite of, or perhaps because of all our war work, Philadelphia should be able to claim a Cactus Club. Anyone who reads this notice, knows that cactus fever will dispel business worries, for a time at least.

If you want to get together with other Cactophiles to discuss your hobby, get in touch with our Deputy Regional Vice President at once. Write or phone to—A. Malcom Martin, 5628 N. 4th St., Philadelphia, Pa. Phone—Waverly 7096.

MIDWEST SOCIETY

The Midwest society held the annual meeting the fourth Sunday in August and elected new officers as follows:

E. J. Fish, Strongsville, President.

F. N. Hinckley, Cleveland, 1st. vice president.

F. W. Williams, Lorain, 2nd vice president.

Mrs. John E. Rodgers, secretary-treasurer.

Mrs. Anna Voss, librarian.

Lewis Wahrer was named program chairman and he will be assisted by Mrs. Hinckley. Dr. Machwart was named chairman of publicity and exhibit committee. Mrs. Max Forke is registrar for our record of blooms.

Members decided to hold regular monthly meetings for the duration, even though attendance may be slightly less. Spine Tips, edited by John Rogers, will be a little more extensive and will encourage more of their already successful corresponding memberships.

FIG. 75. Cocoons and egg-sacs of *Eriococcus coccineus* on *Mammillaria* in 2¼ inch pot.

Some Other Cactus Fanciers

By ROBERT S. WOODS

Photos by Author

As a rule, cactus growers are highly gratified by any demonstration of interest in the plants which they so lovingly cultivate, but when this interest takes a practical rather than esthetic form, it frequently is less appreciated. In southern California one may meet many devoted, full-time cactus specialists whose names probably never will be suggested for honorary membership in the Cactus and Succulent Society of America.

For example, many beginners in cactus culture must have been mystified by the sudden appearance of small, oval, felt-like white objects attached to the spines or other parts of their plants. If the white covering is removed, a dark body is found which when crushed produces a reddish stain. If one examines the plant closely, he is likely to find in the grooves and axils or at the edges of the areoles various small smooth-backed insects resembling miniature sowbugs, which walk about slowly when so inclined. By watching them patiently, you may chance to see one of these insects advance part way out on a spine and stop, then begin to exude waxy threads which presently form an opaque white sac which is as noticeable as the insect was previously inconspicuous.

It will be observed that some of these cocoons are smaller and narrower, as well as more numerous than the others. From these will emerge the flying male insects, minute and dainty creatures with powdery-white body and wings, trailing a pair of white filaments. Within the larger casings, however, the life-cycle of the female comes to an end, and the cocoon becomes at once an egg-case and a coffin. These egg-sacs appear throughout the year in southern California, though much more abundantly in hot weather.

The name of this scale-insect, as supplied by the California Department of Agriculture, is *Eriococcus coccineus* (*Erio-* wool; *coccus,* a kermes scale, literally a berry, as the ancients believed it to be; *coccineus,* scarlet). It belongs to a genus closely related to the mealy-bugs, though the latter are easily distinguishable by the waxy white covering which they bear throughout their active careers. This species was probably imported from Mexico on plants; it spreads rapidly and seems to have no important natural enemies here, so that it is one of the cactus grower's most annoying pests, though it does not congregate so thickly as to menace the lives of the plants. It is most serious on certain

Mammillarias and other small white-spined species, as it secretes a honey-dew upon which a smut fungus grows, causing unsightly blackish patches.

Various sprays have been recommended for the control of the spine bug, as it has been appropriately called, but the writer has so far found fumigation more effective. With either method there is danger that the plant may be more seriously injured than the bug, so direct action with a pointed stick is always safer, if the supply of time and patience is adequate, and the plant is not too spiny or cespitose. Incidentally, this insect offers one of the many instances in which nature's best-planned protective devices prove only snares when the human element enters. Undoubtedly its method of forming felted cocoons out on the spines provided safety from crawling insect enemies and parasites, but it very effectively calls the attention of the cactus grower to the presence of the scale, which otherwise might easily escape notice. By a process of artificial selection, it may be conceived that the proportion of scale-insects seeking more obscure nooks for the performance of their final duties will gradually increase.

If one collects cacti for their esthetic rather than their scientific value, it may be well to favor those species which are not favored by *Eriococcus*. *Echinocactus grusonii*, desirable for its elegance of form and coloration, seems to be entirely immune to the attacks of the insect at all stages of growth, although other species of the genus are infested. Most species of *Mammillaria* are especially favored hosts, but *M. elongata* and *M. fragilis* in the writer's collection have been completely free. It might be an interesting bit of research to determine the chemical constituent of these species which makes them unpalatable to the scale. Opuntias and epiphytic cacti are also generally immune. *Echinocerei* are heavily infested, and most of the *Cereanae* are attacked while small, but become more resistant as they increase in size. Fortunately, the ornamental *Oreocereus* and *Espostoa* have been little troubled at any stage, but it is difficult to keep *Binghamia pacalaensis* free from the pest even when well grown. It is easy to keep plants like *Astrophytum myriostigma* clean by hand, as there are no places for the insects to hide, but species of *Rebutia*, for example, with their many tightly clustered heads, must almost of necessity be fumigated in order to kill the scales which take refuge in the innumerable nooks and crannies where they might not be reached even by submerging the plants in a spray solution. To reduce the risk of ruining valued specimens, it is better to use a light dosage of perhaps one-half teaspoon of Cyanogas to an ordinary wash-tub, and repeat the treatment if it is ineffective, as the influence of the gas on both plants and insects seems to vary greatly even under apparently identical conditions.

Of less concern to most cactus collectors, the California cochineal scale (*Dactylopius confusus*) specializes on *Platyopuntia* and *Nopalea*, upon whose joints and fruits it exudes irregular masses of cottony material which conceal the crimson bodies of the insects. These masses are of various sizes according to the number of individuals which form them, and sometimes coalesce to cover practically the entire surface of a joint. Being a native species with many natural enemies, its abundance follows strongly marked cycles. On the cactus-covered washes of Los Angeles County, the cochineal scale will build up during a few years until nearly every native *Platyopuntia* is conspicuously infested with it and some of the clumps are killed, after which it will gradually decline until the area is apparently quite free from it for a period of years. This scale never occurs on the larger-jointed forms of *Platyopuntia*, such as the cultivated "spineless" cactus. It can usually be kept from

FIG. 76. *Opuntia* joint infested with cochineal scale. The small pale circles appear to be the work of the cactus-joint bug.

specimen plants by scraping off the small white tufts when they first appear.

The cactus scale (*Diaspis echinocacti cacti*) is sometimes a serious pest on *Epiphyllum, Cereus, Opuntia,* and probably others. It is one of the "armored" type (to which the name "scale" undoubtedly was originally applied), light gray, flat, round, hard-shelled, and fixed in position after the first molt. It spreads less rapidly than the previously mentioned species, but seems to prefer cultivated plants, and may become so numerous as to hide areas of the plant's surface. In similar circumstances scales of a more reddish color may be found, probably the common red scale of citrus, *Aonidiella aurantii*. Either spraying or fumigation may be used in the control of these scales, the principal consideration being avoidance of injury to the plant.

In some years the cactus-joint bug (*Chelinidea tabulata*) becomes an annoying pest on the flat-jointed Opuntias. It resembles the well-known squash bug, but is somewhat smaller. The wingless young are gregarious, feeding in groups on the side of the cactus joint, and scurrying for cover if any sudden movement is made in their vicinity. The results of their work are seen in small pale circles, such as may be detected in the photograph of the *Opuntia* joint. Both adults and young are easily disposed of by approaching them cautiously and knocking them off into a can of kerosene.

Ferocactus acanthodes (and probably others) secretes some substance from its upper areoles which attracts sweet-loving ants. In the scheme of nature, it must be assumed that the ants perform some service in return for this bounty, but just what that service is could probably only be discovered in the native habitat of the species. The small red fire ant (*Solenopsis xyloni maniosa*) is often seen about cactus plants, even when there seems to be no insect infestation, but it appears to do them no direct harm; it does, however, habitually eat holes in the leaves of *Agave mitriformis*, making its nest underneath the plant for the sake of convenience. Aphis, both green and black, often injure the flower buds of various cacti, but cannot penetrate the skin of the other portions.

A cactus fancier that must not be overlooked is the brush rat (*Neotoma fuscipes*), an animal the size of the common brown rat, but distinguishable by its large eyes and ears. On the San Gabriel Wash this rodent builds bulky straw nests beneath spreading clumps of prickly pear, upon whose joints it seems to depend in part for its food. It is also fond of building nests behind boxes or lumber in farm buildings. When possible, it always manages to include a few joints of "cholla" cactus, supposedly for the purpose of discouraging snakes or other uninvited visitors. One individual displayed a most remarkable perseverance in endeavoring to build its nest under the hood of the family automobile, evidently liking the warmth given off by the motor. To one accustomed to eating the coarse and spiny Opuntias, unarmed epiphytes naturally are a delicacy, and a medium-sized *Schlumbergera* or a smallish *Nopalxochia* strikes Mr. Rat as just about right for a midnight snack.

The foregoing by no means exhausts the list of cactus addicts, but includes only those which the present writer has unwillingly entertained and with whose idiosyncrasies he is therefore more familiar.

Azusa, California, July 1, 1942.

FIG. 77

Female Costa Hummingbird and nest in *Opuntia imbricata*. This species of the southwestern United States and northwestern Mexico is the most desert-loving of our hummingbirds and often makes its nest in "cholla" cacti, where it is safe from walking or crawling predators at least. The top of the head, throat and projecting ruff of the male Costa are luminous metallic violet, with blue or magenta lights at certain angles. Since this nest was shaded by the upper branches, it was illuminated by reflected light. Photo taken at Azusa, Cal., by R. S. Woods.

Is Binghamia Valid?

By Dr. Leon Croizat

Two very different plants have been called *Binghamia,* a seaweed and a cactus. Recently, Setchell & Dawson have written about these plants (in Proc. Nat. Acad. 27:376-381. 1941), concluding that *Binghamia,* the seaweed, must be renamed *Binghamiella,* and that *Binghamia,* the cactus, may remain under its current name.

In the coming pages I will show that the conclusions of Setchell & Dawson are not correct, pointing out that *Binghamia,* the seaweed, is well and properly so named, and that the cactus, on the contrary, cannot be known as *Binghamia.* In a second article I will determine the proper name for this cactus.

In support of their decision, Setchell & Dawson introduce the International Rules of Botanical Nomenclature revised by the Botanical Congress of Amsterdam in 1935, the so called Amsterdam Code. I take note of this with pleasure. It is hardly possible to discuss the contentions of authors who do not abide by the proper rules, but it is easy to deal with the interpretations of writers who accept them. At the risk of appearing repetitious, I emphasize here the fact that *botanical nomenclature and card playing have a great deal in common.* There are rules which determine whether *Binghamia* is to remain the name of the seaweed or of the cactus, just as there are rules to establish whether in a game of bridge the king is to take the queen or the other way around.

Before entering into the merits of the case, it is desirable to restate some of the principles of the Amsterdam Code. This Code prescribes: (1) The Articles of the Rules of Nomenclature are always retroactive; names and forms in conflict with an Article cannot be maintained and are *illegitimate* (Art. 2); (2) No one may reject a name because he likes another name better (Art. 59); (3) No one may change a name without serious motives, based either on a more profound knowledge of the facts or on the necessity of giving up a nomenclature which is contrary to the Rules (Art. 17); (4) In the absence of an Article or where the consequences of the Rules are doubtful, established custom must be followed (Art. 5); (5) Stability of nomenclature is the first and foremost concern of the Rules (Art. 4); (6) No one may modify the Rules unless in the proper manner and at the proper time, that is, by proposals made before, and approved by a Botanical Congress (Art. 74).

The six principles just stated are the embodiment of common sense. Jointly taken, they mean that an author who intends to alter nomenclature in current use assumes the responsibility of proving his case beyond a doubt, showing that under the Rules he cannot do anything else but to put a "good" name in a place of a "bad" one. Bentham (in Jour. Linn. Soc., Bot., 17:190. 1878) says that in the application as well as in the interpretation of the rules of botanical nomenclature it must be borne in mind: "First, that the object of the Linnean nomenclature is the ready identification of species, genera, or other groups for study and reference, not the glorification of botanists; and secondly, that changing an established name is very different from giving a name to a new plant." Bentham's comment perfectly agrees with the spirit and the letter of the Rules, as the reader will notice, and affirms a truism, that is, the names used in botany belong to *all botanists* rather than to *one botanist.* Naturally, these names cannot be lightly altered.

Discussing *Binghamia,* the seaweed, Setchell & Dawson (op. cit., 377) argue that the name was never validly published and that it may be disregarded in favor of *Binghamia,* the cactus, which according to them, was so published. The two authors point out that: "(1) The description of J. G. Agardh in 1894 was not in the form of a diagnosis, and no species was mentioned as a basis for the genus. (2) When the binomial *Binghamia californica* was first suggested by Farlow in the letter to Mrs. Bingham, it was used only as a tentative name. (3) The figures published by Agardh in 1899, accompanied only by a meager diagnosis in the explanation of plates, do not show sufficient essential characters to be accepted under specification 3 of Art. 44."

Let us accept, for the sake of argument, the possibility that these contentions are true. If so, either one of two alternatives is open, as follows

(A)—*Binghamia,* the seaweed, is a name of uncertain application [*nomen dubium*—Art. 63], that is, the description that accompanies the name is so obscure that the name cannot be applied to any known entity.

(B)—*Binghamia* is a name which was never fully published [*invalid*—Art. 42], that is, its description is so meager as to practically useless to a botanist.

Under the first of these alternatives, *Binghamia* can be rejected outright (Art. 63) or be certified (Rec. xxxvii) by an author who is able to establish its status. Under the second, *Binghamia* can be disregarded [but not duplicated, as it will be seen], or be taken up by an author who supplies the necessary description. In both cases (Art. 48, Rec. xxxvii) the name of the certifying author should be indicated, preferably with the date of certification.

The reader of these notes is fully aware by now that to have the right to reject *Binghamia*, the seaweed, and to rename it *Binghamiella*, Setchell & Dawson were bound to prove as a preliminary that *Binghamia* was a "bad" name which it was absolutely necessary to discard (Art. 4, Art. 5, Art. 17, Art. 59). The question then logically follows whether Setchell & Dawson's discussion actually proves that *Binghamia* cannot be upheld, for it is on this proof—and nothing else—that the legitimacy of *Binghamiella* depends. Even if Setchell & Dawson had doubts as to the status of *Binghamia*, they should have maintained this name, because in doubtful cases established taxonomic custom must be followed, that is, current names must be upheld (Art. 4, Art. 5).

An impartial reader of Setchell & Dawson's discussion is bound to conclude as a matter of fact rather than of opinion that the claim of these authors that (op. cit., 377-379): "The algal genus *Binghamia* cannot be considered validly published" is unproved. It must be admitted that hard and fast criteria are lacking to decide in every case whether a name is published with a description long enough and formal enough to deserve to be called a full-fledged taxonomic diagnosis. Clearly, everybody has the right to his own opinion on the score, and I am certainly not inclined to deny Setchell & Dawson the right to think in a manner that suits their understanding of *Binghamia*. However, it stands to reason that the *final test* whether a name is actually published or not, in cases like this one, can only be *the test of practical use* because a long and formal description may be obscure, but a short and informal one may be revealing.

Can the name *Binghamia* be given to a seaweed that fits the description and figures of Farlow and Agardh, inadequate as these descriptions and figures may happen to be? Setchell & Dawson themselves answer this question with an emphatical *yes*. They tell us (op. cit., 377) that three Japanese algologists, Inagaki, Segawa and Okamura have positively identified as *Binghamia* a seaweed which is practically the same as the Californian plan known under this name to Farlow and Agardh. Nor is this all: Setchell & Dawson treat *Binghamia* as a flat synonym of their own *Binghamiella*, which is admitting that they recognize in the plant they describe and illustrate as *Binghamiella* the very same seaweed named *Binghamia* over forty years before by Agardh if not by Farlow. The fact that Farlow's and Agardh's accounts of *Binghamia* are not all presented in a formal manner is irrelevant: the Rules do not reject names which are published without an indication of specimens or type-species, and accept names typified by descriptions or figures (Art. 18). The Rules do so on the very sound assumption that taxonomic usage has varied a great deal between 1753 and 1942, and that it is neither wise nor possible to discard names published in conformity with standards other than the current ones. The Rules very wisely bind anybody who wishes to change or to reject names to realize that "changing an established name is very different from giving a name to a new plant," and lay upon his shoulders the responsibility of proving the *necessity* of the intended change. It would be disastrous to taxonomy if names could be shifted on mere formal grounds to suit the personal opinion of this or that botanist. If Setchell & Dawson had reason to believe that *Binghamia*, the seaweed of Farlow and Agardh, has not been characterized fully and effectively, they could retain the name *Binghamia* with an amended description, but in no case could they advance the new name, *Binghamiella*.

To round up these comments, I am willing to admit for the sake of hypothesis that *Binghamia* was never validly published, and that Setchell & Dawson are right in their belief that the descriptions of Farlow and Agardh are insufficient. If so, I must remark that *Binghamia*—either as a *nomen dubium* or as a *nomen invalidum*—was certified by any one of three Japanese authors, Inagaki, Segawa and Okamura, the last mentioned having written in 1938, that is, three years before the publication of *Binghamiella*. The publication of *Binghamia*, the cactus, in 1920 does not affect the certification of the Japanese algologists because *Binghamia*, the cactus, is illegitimate, and only legitimate names can be taken into consideration for purposes of priority (Art. 45). A Latin diagnosis, as is well known (Art. 38), is required only when the publication of the name of a new group is involved. Setchell & Dawson tell us that there is practically no difference between the seaweed of Japan known to Japanese algologists as *Binghamia* and the seaweed of California which they rename *Binghamiella*, but suggest that differences may later be found to separate the Asiatic from the American seaweed. Should this prove

to be the case, the name *Binghamia* may remain attached to the Japanese form on the strength of the certification effected by Japanese authors. In no case can the name *Binghamia* be rejected.

It is my suspicion that Setchell & Dawson would not have labored to save *Binghamia,* the cactus, had they realized that this name could not be maintained, anyway. Their discussion is tainted throughout by a misapprehension fully apparent in their statement (op. cit., 377-379): "Since the algal genus *Binghamia* cannot be considered validly published, there are no rules which bar it from use for a genus of cacti." This is a fallacy, for precisely such a rule exist as the two authors deny. This rule is contained in Art. 61 which states that even if the earlier homonym is illegitimate, or is treated as a synonym on taxonomic grounds, the later homonym must be rejected. This means that even if *Binghamia,* the seaweed, named in 1894-1899, is illegitimate, or is treated as a synonym on taxonomic grounds, as done by Setchell & Dawson themselves under *Binghamiella,* the later homonym, *Binghamia,* the cactus, published in 1920 must be rejected. Nothing can be stated against this precise disposition, and it becomes useless, accordingly, to try to rescue *Binghamia,* the cactus. I feel the need of emphasizing here the fact that much objectionable nomenclature is proposed by authors who take under consideration some Articles in the Rules, forgetting all others. The Rules are a *body of law*: their Articles and Recommendations are bound together as a whole, and it is not permissible to emphasize something in the Rules unless everything else be kept in mind.

Article 61 was *not* in the Codes of Vienna and Bruxelles, and it is probable that Setchell & Dawson still think in the terms of laws of nomenclature current in 1905 and 1910, but now superseded. Article 50 of the Vienna and Bruxelles Codes stated that a name could not be rejected, "Because of the existence of an earlier homonym which is universally regarded as non valid, or for any other motive either contestable or of little import." The authors of this Article meant well, no doubt, but in practice their intentions failed. In any law, a generality is worthless unless means are provided to decide as to who is right or wrong *in individual cases.* Naturally, when citing Art. 50, every taxonomist was inclined to think of his own reasons as excellent, and of those of the fellow next door as "contestable or of little import." Accordingly, somebody would reject *Binghamia,* the seaweed, deeming this genus to be "no good," while somebody else, on the contrary, would cling to it on the ground that the motives of his opponent were "contestable or of little import." Out of the basic fallacy in Art. 50, controversies and doubts grew to such an extent that the botanists of Great Britain ultimately decided to do something, proposing in 1930, the changes which are embodied in Articles 59 and 61 of the current Code. It is worthy of notice that Miss L. Green, who took part in the discussions leading to the modification of Art. 50, states in her authoritative comment (in Empire For. Jour. 10: 68. 1931) that: *"At Cambridge, therefore, it was decided that ALL later homonyms should be rejected even if the earlier homonym is not an accepted name."* This is the voice of common sense, because outlawing *all* later homonyms, regardless of their status, radically disposes of the fundamental weakness of the old Art. 50.

In conclusion, *Binghamiella* Setch. & Daws. is a synonym of *Binghamia* Agardh, and the algologists may decide whether *Binghamia* was actually published in 1894 or in 1899. As to *Binghamia,* the cactus, it must go. *Binghamia,* the cactus, has never had an absolutely clear status: the original description is imperfect, and the name itself has been treated under *Cereus* by Berger and Vaupel, under *Haageocereus* and *Borzicactus* by Backeberg. Under the circumstances, there is no justification to propose *Binghamia,* the cactus, as a *nomen genericum conservandum* (Art. 21), upsetting the use of the name in connection with a known Japanese and American seaweed. It should be added that names are conserved only as an exception, after their having been long rooted in use, when their rejection would call for disturbing and unnecessary transfers and new combinations. If the principle were to be admitted that comparatively recent and not well established names, with a controversial status can be preserved easily on the ground that they are "preferable" or "better known," there would be no end to the coining of *nomina conservanda,* for every taxonomist has his pets. It is but fair that priority be kept up as the cornerstone of nomenclature, names being conserved only in *exceptional cases,* which is the declared intention of Art. 21.

FROM CPL. ROBERT ROSE

In a great many respects being in a training camp puts a very serious damper on one's enthusiasm about cacti and succulents. However, I read the JOURNALS and think they are better than ever before. I think the new addition of the Amateur Journal is an excellent one. I read these JOURNALS over several times and then send them back home to be saved for future reading.

Here in Camp Barkeley I have started a sort of remote control collecting, you might call it. I am now collecting Haworthias. The plants are sent home where they are potted and correctly labelled. They are then photographed and an index card made for each plant. These are then sent to me. It may sound kind of silly to lots of people but I enjoy collecting even if it is by remote control.

The following 8-page insert is the 4th installment of Werdermann's book "Brasilien und Seine Saulenkakteen"

FIG. 78

These veteran Barrel Cacti were photographed one mile east of the old Vallecito stage station along the Butterfield route in Southern California. The plants are about 6 feet tall and are the natural symbol for Victory. Photo by W. Ford Lehman in the Desert Magazine, El Centro, Calif.

Who's Who in the Succulent World

By H. C. SHETRONE, *Director,*
The Ohio State Museum, Columbus

"What's your favorite Succulent— or your ten favorite Succulents?" This question has been asked from time to time in the columns of the JOURNAL, with the to-be-expected result that no two persons submit the same answer. The reason? Well, it's to be found in that delightful poem in your old McGuffey Reader entitled, "Which Shall It Be": Even the 'turbulent, reckless idle one', in the eyes of loving parents, could not more easily be spared than his more tractable brothers and sisters!

While no true fancier of Xerophytic plants could bring himself to ignore entirely any of the several families in which these occur, there can be no doubt that the 'succulent' genera of Liliaceae are general favorites. The reason is not far to seek. Where else than in the Haworthias, Apicras, Gasterias and the smaller types of Aloes can there be found such desirable attributes as convenient size, diversity of form and color, comparative ease of culture, and availability?

Because of a liking for this group of plants, this writer has spent many enjoyable hours in compiling a check list, or tentative bibliography, particularly as regards the Haworthias. Readers of the JOURNAL may care to share in this admittedly amateur and incomplete project.

Our research has been confined for the most part to such literature as may be available to American collectors, either in the form of current publications or through botanical libraries. Somewhat in the order of their availability, these are: files of the CACTUS AND SUCCULENT JOURNAL and of DESERT PLANT LIFE magazine; SUCCULENTS FOR THE AMATEUR; SUCCULENTS OTHER THAN CACTI (Van Laren); SUCCULENT PLANTS (Jacobsen), and Alwin Berger's classic contribution on the Aloineae (SUCCULENT GENERA OF THE LILIACEAE). The last-named, published in 1908, in German with Latin descriptions (1908) is a scholarly summary of the literature on the subject up to that time, and continues to be basic in any subsequent study.

Of the several writers consulted in the present digest, J. R. Brown, of Pasadena, Cal., is outstanding as an American authority. His fine series of descriptions and photographs on Haworthias and Apicras in the JOURNAL and in DESERT PLANT LIFE are a joy to those of us who cherish this intriguing group of plants. A series of similar contributions in the last-named magazine by Dr. Karl von Poellnitz describes a number of species and varieties, many of which are recent discoveries, as yet unavailable in America. Jacobsen's SUCCULENT PLANTS is a valuable reference book which unfortunately is rare and high-priced at this time. Van Laren's SUCCULENTS OTHER THAN CACTI carries in the index, but not in the text, names of authors in the accepted nomenclature.

While in America the Haworthias and their relatives are considered as comparatively recent, in the Old World they have been known, admired and written about for more than a century. Scanning the literature backward through time, we find a list of early botanists whose names are synonymous with the romance of xerophytic flora. The novice usually first encounters these in somewhat cryptic suffixes to plant names, eventually to learn that the "Haws," "Hooks," "Baks," "Salms," etc., are convenient abbreviations of names of botanists who first described a species or a genus and published the same in an accredited journal. Thus we have the genus *Haworthia* Duval, named for the English botanist Haworth, by Duval; and the species *Haworthia setata* Haw., a particular plant of the genus *Haworthia,* named by Haworth himself "setata," because it is "bristly," as are all the plants in its Section. Such a procedure may seem awkward and unnecessary to the amateur, but after all it is the only way of definitely identifying our plants, since from time to time various botanists, mistakenly thinking they had discovered a new species, have given them various names.

The result of this writer's hurried research takes the form of several typed pages, listing in alphabetical order (*Haworthia aegrota* to *H. Zantneriana*) upwards of 150 species and varieties, with accredited authors, Sections into which they fall, publications in which they are described and perhaps illustrated (page, cut., etc).

Of the twenty-odd Sections to which the Haworthias are assigned, less than half are represented in amateur collections in America. Most familiar perhaps are the "pearly" species in the Margaritiferae Section, as *H. margaritifera* and its varieties; and *fasciata, attenuata,* and *radula.* Less well-known species which every collector aspires to possess are *H. papillosa* and *tuberculata.*

Definitely intriguing and fortunately not so rare as some others are the semi-truncate plants in the Retusae Section, in which *H. retusa, as-*

perula and *turgida* are fairly well-known. Others which may be designated as "something to shoot at" are *mirabilis, Triebneriana* and *pygmea.*

Haworthias: *setata, Bolusi, archnoides,* and *minima* of the Setato-Araneae Sections are delightful plants and should be available through local growers. This also is true of *H. pilifera* and *H. Dielsiana,* of the Section Limpidae, two of the striking windowed types, with ice-clear translucent leaf tips.

Still rare and high-priced and not always available are *Haworthia truncata* and *H. Maughanii,* of the Fenestratae Section—one of several sections originating since Berger's contribution was published. These plants, appearing as though the upper parts of their leaves had been cut off squarely, are among the oddities of the plant world.

Quite different from all the foregoing plants are the taller stemmed species in Coarctatae, of which Haworthias: *coarctata, Chalwinii, Reinwardtii* and (just recently available) *resendeana* are outstanding.

The Apicras, much fewer in number than the Haworthias, are delightful plants, mostly stemmed and resembling the Haworthias in the Coarctatae Section. Berger lists only nine distinct species, most of which along with more recent discoveries have been described by Brown in the JOURNAL and by other authorities in the literature above referred to.

Space will not permit more than casual mention of the many delightful species of *Aloes*—dwarf types and seedlings or offsets of the larger species—and the equally attractive plants in *Gasteria,* which are available to local collectors. Besides, they are quite well known and are freely represented in amateur collections. We shall dismiss them by saying, "Watch out for *Aloe Dinteri!*" It's a collector's dream!

Just as I was about to withdraw this page from the typewriter, I sensed a stir on the window shelf at my right. It's *Haworthia cymbiformis* which, among some three dozen other species, had been overlooked. "Whydaya high-hat me? Aren't I the very first plant you owned?" He was—and is; he's seven years old. And lovely pagoda-like branched *Haworthia viscosa* just looks proud and says nothing. He (maybe we'd better call them all "she," except plants which refuse to bloom or make offsets). She knows where she stands in my esteem!

NEW PRICE LISTS

Albert Arozena Nursery, 1518 East Rosecrans Ave., Compton, California. Wholesale price list for August and September. Seven page mimeo list of assortments and quantities. Common names are listed and cross indexed. To obtain a list, make request on your dealer stationery. No retail trade.

HARDY ALOES FOR ARIZONA

Q. What species of Aloes are hardy to grow in southern Arizona?

A. In answer to the question as to which species of Aloes are hardy and successful as outdoor plants in the Tucson-Phoenix area, I must say that as yet so few have been tried that it is impossible to give an accurate or complete list.

In the early spring of 1940 a group of some thirty species of Aloes were introduced from California for planting in the Desert Botanical Garden of Arizona at Phoenix. The planting was done in the open, and the plants were afforded little protection from the frost, though most of them were covered the first summer to protect them from the sun.

The winters of 1941 and 1942 were not severe, and there has been little frost damage. The following Aloes seem to have done very well, and for the most part have blossomed:

africana
andringitrensis
ausana (must have shade)
cameronii
distans (must have shade)
ferox
grandidentata
humilis (needs protection from rodents
mitriformis
nobilis
Salm-dyckiana
spinosissima
striata
variegata (must have shade)
vera

I think that it is wise to plant any Aloes in the light shade afforded by Parkinsonia or Palo Verde Trees. Nearly any will sunburn if planted in the direct sun, causing unsighly brown blotches on the leaves. Aloes: *africana, spinosissima, ferox, humilis,* and *vera* have been the most anxious to bloom, and are probably as desirable as any. In case of an exceptionally cold winter, all of these plants would doubtlessly require some sort of frost protection.

The cottony scale asked about is probably the native cottony cochineal (*Dachtylopius tomentosus*). This insect is common in California and Arizona, where it is often found on Opuntias in the wild. Some sort of an oil emulsion spray, applied in rather heavy dosage, should take care of it. In case the infestation is light, alcohol painted over the "cushions" with a small brush may be sufficient.

GEORGE LINDSAY.

VISITORS WELCOME

W. B. McCallum, 1125 A St., Corvallis, Oregon.

A NEW SPECIES AND VARIETY OF SCLEROCACTUS

Sclerocactus havasupaiensis with its var. *roseus* were described by Elzada U. Clover, University of Michigan, in the *American Journal of Botany,* Vol. 29, No. 2, Feb., 1942.

CACTI OF THE CANYON OF THE COLORADO RIVER AND TRIBUTARIES

The *Bulletin of the Torrey Botanical Club,* June, 1941, contained a report by Dr. Elzada U. Clover of the distribution of cacti along 666 miles of the Colorado River from Greenriver, Utah, to Boulder Dam, Nevada. The following species were found: *Echinocactus polycephalus; Echinocerei: acifer, octacanthus, coccineus, Engelmannii, Fendleri, mojavensis; Ferocactus acanthodes; Opuntias: Whipplei, tetracantha, acanthocarpa, echinocarpa, Bigelovii, molesta, basilaris, basilaris* var. *nana?, brachyclada, aurea, Vaseyi, phaeacantha, Engelmannii, mojavensis, laevis, chlorotica, erinacea, hystricina, rhodantha, polyacantha; Phellosperma tetrancistra; Sclerocactus Whipplei* and *S. polyancistrus.*

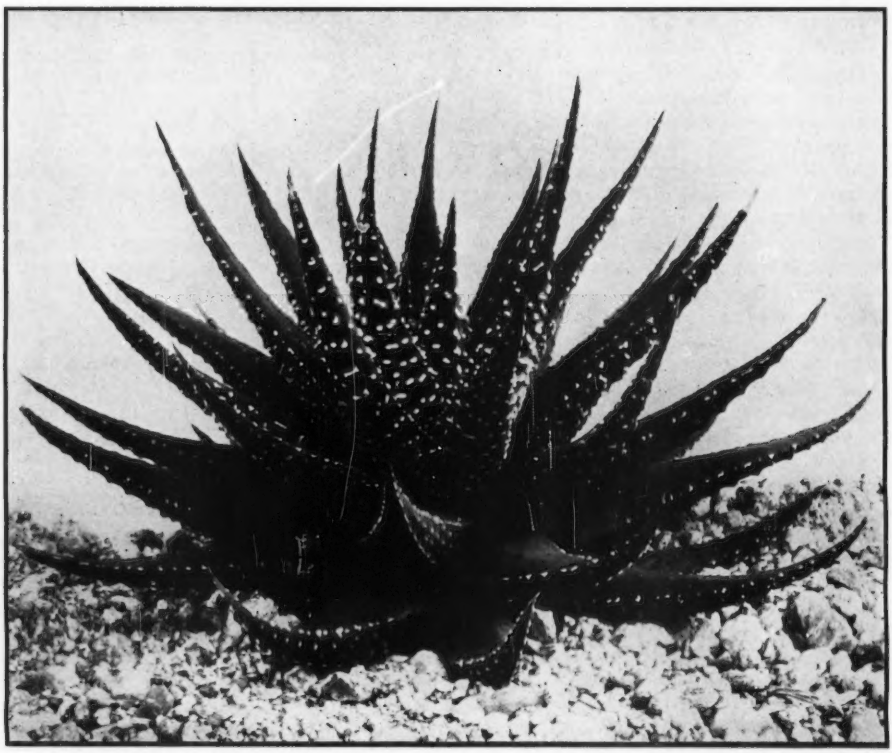

FIG. 79. *Haworthia subattenuata* (Salm) Bak. nat. size.

Notes on Haworthias

By J. R. BROWN

Haworthia subattenuata (Salm) Bak. in Journ. Linn. Soc. XVIII (1880) 205; Berger in Pflanzenr. IV. 38 (1908) 89. *Aloe subattenuata* Salm-Dyck, Monogr. (1836-49) sect. 6, fig. 11.

Plant stemless and proliferous from the base, about 15 cm. in diam. and 10 cm. in height. Leaves, younger erect, the older spreading, lanceolate-deltoid, gradually acuminate, 5-7 cm. long, 16-20 mm. wide towards the base, deep green, somewhat reddish green with age, face of leaves slightly convex, almost smooth, but with a few, small greenish tubercles usually in a lengthwise middle line, but occasionally somewhat scattered, back of leaves very convex, keeled towards the slender triangular tip and with numerous, medium sized, white, usually solitary tubercles, scarcely in transverse rows.

Peduncle branching, about 45 cm. tall including the somewhat spicate racemes; bracts broadly deltoid, twice as long as the very short pedicels; perianth about 15 mm. long, the tube pale rose, green lined, the segments very recurved, obtuse, white, with rose colored keels towards the tips.

Locality: Type locality unknown.

First noticed by Salm in the imperial garden at Vienna early in the 19th century.

The illustration shows a mature plant of *Haw. subattenuata* which was grown outdoors. This Haworthia has been in cultivation in this country for a long time, its identity is usually lost among various hybrid forms of *Haw. margaritifera* and one may even find it under this name. It resembles a smaller, more slender *Haw. margaritifera* var. *semimargaritifera* (Salm) Bak.

FIG. 80
Flowers of *Haw. subattenuata* (Salm) Bak. nat. size.

It is somewhat difficult to identify in the younger stages but a mature plant is distinct by the comparatively narrow and long acuminate leaves with slender triquetrous tips.

The peduncle usually with 3 branches. The flowers on part of a raceme are also illustrated, the deltoid-lanceolate bracts were 4-5 mm. long, the pedicels 1-2 mm. long. The flowering period is during May and June in So. California.

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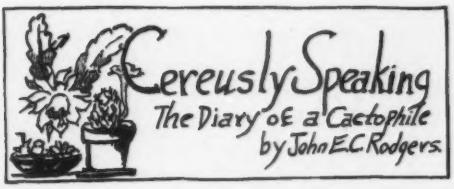

PART IX

September in Ohio

September 1. My sins of omission and commission show up about now. Plants that have been growing all summer, begin to stop for a breathing spell. Plants which have stopped growing during the summer heat, resume with the cooler days and nights. Bugs and slugs, mice and lice, move in with the plants that have been out during the summer. And solemnly, with blood in my eye, I load my spray guns and set my traps.

September 2. Cleistocactus Strausii, that straight, upright, columnar cactus you read about, didn't pan out that way for me. My original six-inch center stalk is surrounded by five six-inch stalks. Too, that white hairy surface isn't white. It is brown and buff. Marshall and Bock console me (pg. 106) and lead me to believe it is variety *jujuyensis* instead of regular *Strausii. Cephalocereus Hoppenstedtii* had a root injury when it came to me. I cut off four inches and rerooted it in sand. Now it is 4½ inches in diameter. A nice plant. . . . In 1934, made 4 cuttings of *Stapelia gigantea* for trading. The plant had been sold to me as *S. nobilis,* but 4 blooms on this date disproved that idea. Well, we can't expect dealers to always know everything. The name a dealer gives me, I consider a key for identification through Britton and Rose, and now Marshall and Bock, too.

September 3. "Brevispinus"—*Opuntia glomerata* interesting. Has short spines and a few spicules. Thought at first it was a sign of infancy, but after five years and the growth of 15 developed sections, it is no different. I have another plant which lines up perfectly with the Britton and Rose description of *glomerata.*

September 4. Handed in my badge at the National Tube Co. Hated to leave the fellows I had worked with all summer, many of them my former students. They have dubbed me "Professor of the Open Hearth." First time I have been called professor since my first teaching job in Greenville, Darke County, Ohio, where even a high school teacher is called "professor." This is our 16th wedding anniversary and Gene and Violet Ziegler, the cactus nuts from Spencerport, N. Y., arrive in near-by Elyria via the N.Y.C.R.R. at 6:20. We will have a double celebration at dinner at the Graystone before bringing them home for the holiday weekend.

September 5. Heliocereus Schrankii in my greenhouse had a long straight triangular stem with brownish-green edges, but in the sand bed this year, the stalk developed much like that of *Hylocereus undatus.* Evidently *Heliocereus Schrankii* is another misnomer. Bloom will prove it, but as yet there are no blooms and the plant is now about 15 feet long, and multibranched. Jim Carment brought his collection of Kodachrome slides (cactus and succulents in bloom) down from Cleveland to show the Zieglers. Had several couples in to see them and enjoyed the evening.

Jim (engineer for WHK radio station in Cleveland) has to leave early. Goes to work at 4:45 Sunday morning.

September 7. Checked over conspectus of species in Houghton for plants that need calcareous soil. Reviewed material on culture given in Van Laren's "Succulents," and in Haselton's two volumes for us amateurs. Not even a cactophile, I find, can be a rocking-chair success. Experience with the plants help me more each year to interpret the thing. I read written by the "masters." Put six plants under quarantine tonight, until I identify and destroy a white "non-mealy" insect which looks like a mealy bug but not like the ones I have. Placed plants one by one in a closed can with a little cyanogas. Made certain that the plants were absolutely dry. Observations will follow.

September 8. Back to school today. Same room, same subject (the king's English). New faces. And new time. School begins a half hour later this year. *We won't have to carry flashlights to see our way to* school winter mornings. Sandy started me off on a new schedule. An hour in the cactus house before breakfast.

September 9. Allan Crogent, who collected some nice plants in California a few years ago, gave me most of his large plants. "Spine Tips," the little hectographed club paper I edit for the Midwest Society, has entered its third year.

September 11. In 1934, I wrote in my diary, "Cactus house shelves filled. Where am I going to winter those plants I must move inside." History repeats itself. My 6x6 foot house; my 6x9 foot house; and now my *9x15 foot house—all inadequate. Is there a solution to* this problem? No, don't tell me to quit collecting. Nor to give or sell plants ruthlessly. I can't be certain that what appears to be a duplicate today will truly be a duplicate when it blooms now or in 1960. No, sir! No, ma'm! I must keep them. After all, I AM a collector. I will leave some of the plants out at least a month longer. Unless nature "blitzkriegs" us, it will *be at least that long before a frost . . . Cyanogas* worked on September 7. No bugs alive that I can see.

September 13. Some of my students here to see my plants. All have a *Crassula argentia* cutting rooted and growing from my large plant. Gave each of them starts of some of the easier grown plants, i.e., *Graptopetalum paraguayensis, Dyckia sulphurea, Pachyphytum aduncum, Haworthia margaritifera* variety *granata,* and *Bryophyllum Fedtschenkoi. . . .* I keep a list of boys and girls who have asked for plants. I find a child who treasures a growing thing has an open and receptive mind. They all have an equal opoprtunity to become future Luther Burbanks. Mrs. Charles Amato *here to see my collection. Brought me a Kleinia odora,* that obese one which resembles *K. articulata.* I find her to be another enthusiastic collector with whom to share my plants.

September 15. In Cleveland this day last year. Stopped at Kenneth Kline's. Spent more time than I should. Sandy honked the horn several times. This year Kenneth is working at a defense industry and his hobby is curtailed drastically. The offset of *Agave "Nickolsii"* which he gave me has increased three times in size since then. Haven't really identified it as yet. Resembles *Victoria-Reginae* and *Ferdinandi-Regis.* Has brown dry sheathes along side of stems, which eventually loosen and decorate the plant with an attractive overlay design. No ill effects noted as yet from cyanogas treatment used on the 7th. I will use it on some others that seem to need it.

September 17. At a dinner party at the home of Dr. and Mrs. Benjamin Carlson this evening. Both *Epiphyllum oxypetalum* and *E. anguliger* were ready to open, so I took them along. Some guests had never seen a cactus bloom, and were thrilled with the plants. Dr. Carlson showed a few slides which were made *from blooms in my collection.*

September 19. "Blessed events" worth recording today are the offsets produced by *Echinocereus Delaetii, Cochemiea Poselgeri, Mammillaria compressa, Pachycereus marginatus,* and *Borzicactus aurivillus.* Both "mothers and children" doing fine.

September 21. At Lewis and Mary Ann Wahrer's for club meeting. Took 25 plants and cuttings for trade. *Echinopsis -alochlora* offsets needed no second bidders. Have promised several cuttings from my collection of thimble cacti.

September 23. Echinocereus pensilis, Blanckii and *Berlandieri* have several new shoots. *Pereskia sacharosa* is now 20 inches high.

September 24. At L. E. Dubach's in Wellington. Bought a small *Mammillaria elongata* and a *stella-aurata* from his greenhouse. Also a bag of glorious humus for the several rooted cuttings which need to be potted.

September 25. End of tropical hurricane. A full 60-mile gale which tested the flexibility of my wire stakes and tying cords. No damage done, excepting a few pots tipped over. *Ariocarpus fissuratus* bloomed again today. Baby pink. Plants of the others of this genus are still in the "wishful thinking" department of my mind.

September 27. Epiphyllum Ackermannii, which has lived all summer in the partial shade afforded by our "California grape" vine, evidently feels at home. Is blooming again. Bloomed in the greenhouse in April.

September 29. Buds on *Zygocactus truncatus.* On this date in 1939, papers told about snow and a five degree temperature at Melton, N. Y.

September 30 Jottings

1934. Looked a gift horse in the mouth. Examined some plants given to me by Cleveland friends. Several already dead. Had been overwatered and pots used as ash trays.

1935. Mammillaria hidalgensis budded. 39° and clear. Fortunately all plants are protected well by trees or in the greenhouse.

1396. Put Agaves in basement. Cold. Low 41° Heavy clouds will prevent frost. Casein-ited storage room to reflect light.

1937. Warm weather is predicted for this section. Hope so, for *Epiphyllum macropterum* and *Zygocactus truncatus* are outside and budded. May lose buds if *moved before they develop further.*

1938. Stapelia grandiflora has three fine blooms today. Learned in my reading that *Brynesia Weinbergerii* is now called *Graptopetalum paraguayensis.* "Just my luck," says Sandy. "I had just learned not to call it Ghost Plant."

1939. Lighted the furnace. High 58°, and low 49°. We call it squaw winter here which precedes Indian summer and lasts about a week, then October's bright blue weather begins.

1940. In Rocky River to see Merle Weiger, Lord and Burnham representative. Saw several cacti growing in with his grand orchid collection.

1941. Got a card from Paul James from Amarillo, Texas. Is bringing me two Opuntias. Weiger here to measure up for a 9x15 foot greenhouse. Sandy and I drove to Bedford to meet with the 1941-42 program committee for the Midwest Society.

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FIG. 81

This full page insurance advertistment in a recent NATIONAL GEOGRAPHIC is most interesting in its application. Is there no limit to the use of succulents—even to selling insurance!

APPRECIATION

I have received a copy of your new book "Cacti for the Amateur" from the splendid service of Mr. and Mrs. E. C. Hummel, one of the sponsors.

I must add my personal thanks to you, and congratulations for producing what I think has been long needed.

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Two years ago you kindly made possible for me the convenient purchase of the "Cactaceae," which has opened up immense fields of interest to me. Well do I know how true the statements are concerning those who collect Cacti, in your new book, and how much it relieves one of present day strain which we in Europe have on us.

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